Exhibit 3

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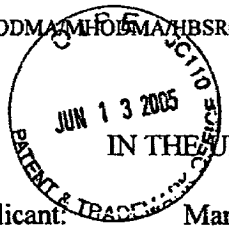
JMS/jat
June 10, 2005

PATENT APPLICATION
Attorney's Docket No.: 1465.1001-011



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Martin F. Schlecht		
Application No.:	10/812,314	Group:	2838
Filed:	March 29, 2004	Examiner:	Matthew Van Nguyen
Confirmation No.:	1817		
For:	HIGH EFFICIENCY POWER CONVERTER		

CERTIFICATE OF MAILING OR TRANSMISSION

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Typed or printed name of person signing certificate

AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Amendment is being filed in response to the Office Action mailed from the U.S. Patent and Trademark Office on December 10, 2004 in the above-identified application. Reconsideration and further examination are requested.

An extension of time to respond to the Office Action is respectfully requested. A Petition for Extension of Time and the appropriate fee are being filed concurrently with this Amendment.

Please amend the application as follows:

06/14/2005 DENMANU1 00000030 10812314

01 FC:1201 400.00 DP
02 FC:1202 350.00 DP

06/14/2005 DENMANU1 00000030 10812314

03 FC:1253 1020.00 DP

Amendments to the Claims

Please cancel Claims 1-26. Please add new Claims 27-59. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1-26. (Canceled)

27. (New) A power converter system comprising:

a DC power source;

a non-regulating isolation stage comprising:

a primary transformer winding circuit having at least one primary winding connected to the source; and

a secondary transformer winding circuit having at least one secondary winding coupled to the at least one primary winding and having plural controlled rectifiers, each having a parallel uncontrolled rectifier and each connected to a secondary winding, each controlled rectifier being turned on and off in synchronization with the voltage waveform across a primary winding to provide an output, each primary winding having a voltage waveform with a fixed duty cycle and transition times which are short relative to the on-state and off-state times of the controlled rectifiers; and

a plurality of non-isolating regulation stages, each receiving the output of the isolation stage and regulating a regulation stage output while the fixed duty cycle of the isolation stage is maintained.

28. (New) A power converter system as claimed in claim 27 wherein the regulation stages are switching regulators.

29. (New) A power converter system as claimed in claim 28 wherein the regulation stages are down converters.

30. (New) A power converter system as claimed in claim 28 wherein a switch in the switching regulator is a controlled rectifier.

31. (New) A power converter system as claimed in claim 27 wherein the first and second controlled rectifiers are voltage controlled field effect transistors.

32. (New) A power converter system as claimed in claim 27 wherein the DC power source has a voltage-fed output characteristic.

33. (New) A power converter system as claimed in claim 32 wherein the voltage fed output characteristic of the DC power source is provided by a capacitor.

34. (New) A power converter system as claimed in claim 27 wherein the signal controlling a controlled rectifier is provided by a transformer winding.

35. (New) A power converter system as claimed in claim 27 wherein the output of the isolation stage is about 12 volts.

36. (New) A power converter system as claimed in claim 35 wherein the regulation stage output is of a voltage level to drive logic circuitry.

37. (New) A power converter system as claimed in claim 27 wherein energy is nearly losslessly delivered to and recovered from capacitors associated with the controlled rectifiers.

38. (New) A power converter system as claimed in claim 27 wherein each controlled rectifier is turned on and off by a signal applied to a control terminal relative to a reference terminal of the controlled rectifier and the reference terminals of the controlled rectifiers are connected to a common node.

39. (New) A power converter system as claimed in claim 27 wherein the isolation stage is a step down stage.

40. (New) A power converter system as claimed in claim 27 wherein the regulation stage output is of a voltage level to drive logic circuitry.

41. (New) A power converter system as claimed in claim 40 wherein the regulation stage output is about 5 volts or less.

42. (New) A power converter system as claimed in claim 40 wherein the regulation stage output is about 3.3 volts.

43. (New) A power converter system as claimed in claim 27 wherein the DC power source provides a voltage that varies over the range of 36 to 75 volts.

44. (New) A power converter system as claimed in claim 27 wherein the DC power source provides a voltage within the range of 36 to 75 volts.

45. (New) A power converter system as claimed in claim 44 wherein the regulation stage output is of a voltage level to drive logic circuitry.

46. (New) A power converter system comprising:

a DC power source;

a non-regulating isolation stage comprising:

a primary transformer winding circuit having at least one primary winding connected to the source; and

a secondary transformer winding circuit having at least one secondary winding coupled to the at least one primary winding and having plural controlled rectifiers, each having a parallel uncontrolled rectifier and each connected to a secondary

winding, each controlled rectifier being turned on and off in synchronization with the voltage waveform across a primary winding to provide an output,; and

a plurality of non-isolating regulation stages, each receiving the output of the isolation stage and regulating a regulation stage output.

47. (New) A power converter system as claimed in claim 46 wherein the regulation stages are down converters.

48. (New) A power converter system as claimed in claim 46 wherein the signal controlling a controlled rectifier is provided by a transformer winding.

49. (New) A power converter system as claimed in claim 46 wherein the isolation stage is a step down stage.

50. (New) A power converter system as claimed in claim 46 wherein the DC power source provides a voltage within the range of 36 to 75 volts.

51. (New) A power converter system as claimed in claim 46 wherein the output of the isolation stage is about 12 volts.

52. (New) A power converter system as claimed in claim 51 wherein a regulation stage output is of a voltage level to drive logic circuitry.

53. (New) A power converter system comprising:

a DC power source;

an isolation stage comprising:

a primary transformer winding circuit having at least one primary winding connected to the source; and

a secondary transformer winding circuit having at least one secondary

winding coupled to the at least one primary winding; and plural controlled rectifiers, each having a parallel uncontrolled rectifier and each connected to a secondary winding, each controlled rectifier being turned on and off in synchronization with the voltage waveform across a primary winding to provide an output voltage whose value drops with increasing current flow through the isolation stage; and

a plurality of non-isolating regulation stages, each receiving the output of the isolation stage and regulating a regulation stage output.

54. (New) A power converter system as claimed in claim 53 wherein each primary winding has a voltage waveform with a fixed duty cycle and transition times which are short relative to the on-state and off-state times of the controlled rectifiers.

55. (New) A power converter system as claimed in claim 53 wherein the isolation stage is non-regulating.

56. (New) A method of providing multiple DC outputs comprising:

from a DC power source providing an isolated output without regulation by applying power through at least one primary winding connected to the source and at least one secondary winding coupled to the at least one primary winding, the at least one secondary winding being in a secondary transformer winding circuit having plural controlled rectifiers, each having a parallel uncontrolled rectifier and each connected to a secondary winding, each controlled rectifier being turned on and off in synchronization with the voltage waveform across a primary winding to provide an isolated output; and

from the isolated output, providing plural regulated outputs without further isolation.

57. (New) A method as claimed in claim 56 wherein each primary winding has a voltage waveform with a fixed duty cycle and transition times which are short relative to the on-state and off-state times of the controlled rectifiers.

58. (New) A method as claimed in claim 56 wherein the isolated output is a voltage whose value drops with increasing current flow.

59. (New) A method of providing multiple DC outputs comprising:

from a DC power source providing an isolated output by applying power through at least one primary winding connected to the source and at least one secondary winding coupled to the at least one primary winding, the at least one secondary winding being in a secondary transformer winding circuit having plural controlled rectifiers, each having a parallel uncontrolled rectifier and each connected to a secondary winding, each controlled rectifier being turned on and off in synchronization with the voltage waveform across a primary winding to provide an isolated output, the isolated output being a voltage whose value drops with increasing current flow; and

from the isolated output, providing plural regulated outputs without further isolation.

REMARKS

Claims 1-26 were rejected for double patenting. That rejection is rendered moot by the cancellation of those claims.

The new claims are directed to an implementation presented at page 23, lines 22-25 of the application. This implementation has become known as an intermediate bus converter. The approach allows for the use of a single isolation stage to step-down, for example, from 48 volts to 12 volts. That stage can be very efficient because no or minimal regulation is required. Regulation is then provided in plural regulation stages to separate outputs. Those regulation stages may be very simple and efficient because, from the low voltage such as 12 volts, no isolation is required.

The lack of regulation in the isolation stage described in the specification and recited in the claims is for normal operation. The claims are not limited with respect to potential control during system transients such as during turn on or turn off of the converter system. Such control may or may not be included.

The examiner's attention is directed to the previously cited Mweene et al. paper "A High Efficiency 1.5kW, 390-50 V Half-Bridge Converter Operated at 100% Duty-Ratio" and the Mweene thesis. As shown in Figure 1 of the Mweene paper, an isolation stage provided step down from 390V to 50V without regulation. The 50V was then stepped down in plural point of load converters to various output voltages. The point of load converters were not the subject of Mr. Mweene's work. However, given the high voltage level at their inputs, each would necessarily have included isolation. By contrast, the present invention is primarily directed to a converter system that receives an input on the order of the 50 volt level of Mweene. Rather than directly converting from the 50 volts to the required voltage in an isolation and regulating stage as in Mweene, the present invention first down converts though an isolating stage without regulation to a voltage that does not require isolation and then converts that voltage to the required voltage without further isolation.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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Concord, MA 01742-9133
Dated: 6/10/5